



CASE REPORT



Gouty tophus without gout attacks treated using a reversed digital artery flap

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ABSTRACT

We report a rare case of a subcutaneous mass on the finger, which was suspected to be a soft tissue tumour and was reconstructed using a digital artery flap after excision biopsy. Tophaceous gout was pathologically diagnosed. The patient had no prior gouty attacks, making the preoperative diagnosis difficult.

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Digital artery flap; biopsy; gout; arthritis

Introduction

Gout is an inflammatory arthritis caused by the deposition of monosodium urate crystals in the synovial fluid and other tissues. Gout attacks primarily involve a single joint of the lower extremities, especially the first metatarsophalangeal joint. Chronic tophaceous gout classically occurs after ≥ 20 years of recurrent polyarticular gout with inadequately treated hyperuricemia. Subcutaneous gouty tophi may occur in any part of the body, but they occur most commonly in the fingers, wrists, knees, olecranon bursae, and pressure points, such as the ulnar aspect of the forearm and the Achilles tendon. The absence of prior episodes of gouty arthritis is unusual. With no characteristic episodes, gouty tophi may be suspected to be a soft tissue tumour.

Surgical treatment of chronic tophaceous gout has become less common because of the use of conservative medications. It had been found that maintaining the serum uric acid level at < 6.0 mg/dL prevents the development of a tophus [1]. Thus, reports on the excision of gouty tophi are rare.

We report a case of gouty tophi in the fingers of a patient who had no prior gout attacks and who underwent surgical operation using a reversed digital artery flap.

Case report

A 75-year-old right-handed woman presented to our hospital with a 2-year history of slowly growing painless masses in the left middle and little fingers. The patient had a generally good healthy condition and had no history of trauma or injury. She had worked as an oyster handler (takes out oyster meat from the shell) for a long time. Clinically, the masses were on the palmar aspect of the left third and fifth distal phalanges. The yellow aspect of the mass was translucent through the skin (Figure 1(a)).

Physical examination showed painless enlarging subcutaneous masses at the left third and fifth distal interphalangeal (DIP) joints with decreased range of motion. A radiograph showed that joint space narrowing and the shadows of the masses were consistent with the physical examination findings. Magnetic resonance imaging indicated that the masses were mainly located around the joints of the third and fifth distal phalanges on the left hand. The masses had low intermediate signal intensity on T1- and T2-weighted images, and their borders were irregular. According to these findings, we suspected this condition to be a soft tissue tumour, such as a giant cell tumour or a fibroma on the tendon sheath or a malignancy. We decided to perform surgery to obtain a more definitive diagnosis by histopathologic examination and to improve the appearance of the affected fingers.

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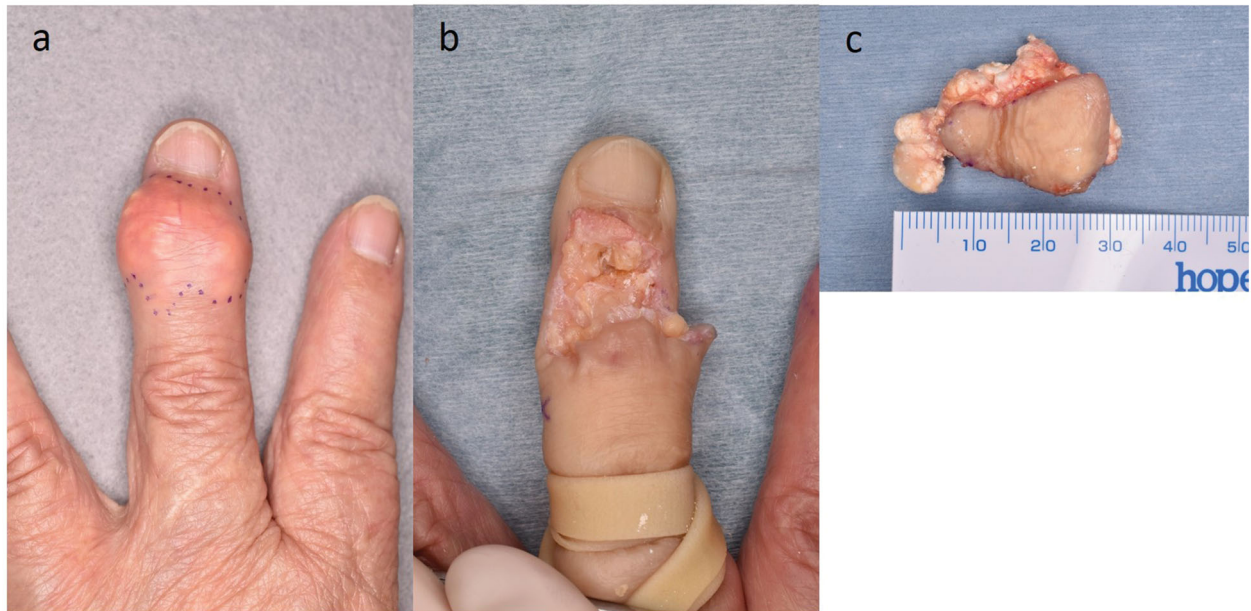


Figure 1. (a) The yellow aspect of the mass was translucent through the skin. (b). A 2.2-cm × 2.0-cm skin defect remained in the middle finger. (c) Resected tumour comprising a chalky substance.

Marginal resection was performed with the patient under general anaesthesia. A chalky substance was drained from the incised part, and the substance was found to have spread throughout the extensor of the ulnar and radial sides to the DIP joint. Thus, it was necessary to remove the substance, including a part of the extensor and bone. The articular surfaces of the base of the distal phalanx and the head of the middle phalanx were resected and a 1.0 mm K-wire was inserted into the joints for arthrodesis. Similar intraoperative findings were noted in the middle and little fingers. We could easily close the skin in the little finger, whereas a 2.2 cm × 2.0 cm skin defect remained in the middle finger (Figure 1(b,c)). Therefore, we performed a reverse ulnar digital artery flap reconstruction (Figure 2).

The histologic examination revealed a crystalloid material surrounded by giant cells, indicating a foreign body reaction. The surgical procedures were uncomplicated with infections, and the healing process was good, although mild congestion occurred. We pulled out the K-wires 3 weeks later, and a detachable thermoplastic splint was applied for 6 weeks to protect the DIP joint. The patient underwent consultation with an internist for further gout treatment. No recurrence of the gout was observed during the follow-up period, and the effects of the treatment did not interfere with her daily life, although the joints were fixed at 10° flexion (Figure 3).

Discussion

In this report, we described a case of gouty tophus in a patient who presented with painless, slowly progressing, enlarged masses on the fingers, which were suspected to be a giant cell tumour on the tendon sheath or fibroma.

Gout attacks primarily involve a single joint of the lower extremities, especially the first metatarsophalangeal joint. Given that chronic tophaceous gout occurs several years after gout attacks, it is easy to diagnose by medical history or using uricosuric medications. However, it has been reported that a few tophi develop as an initial manifestation of gout [2,3]. Tophi usually occur in the lower extremities, but they develop in the upper extremities in women [4]. In our case, the patient's chief complaint was the mass on her finger. She had no episodes of gout attack or history of previous treatment.

Radiographs or magnetic resonance images of the gouty tophus appeared to have various findings similar to those of a neoplasm. Given that a gouty tophus mimics a neoplasm, the diagnosis of gouty tophus was difficult [5]. Furthermore, it is known that gouty tophus occurs in regions with continuous mechanical stress, as chronic inflammation plays a role in diseases such as arthritis. Our patient's long-term history of oyster handling may be relevant because the middle and ring fingers physically contact each other during oyster handling.

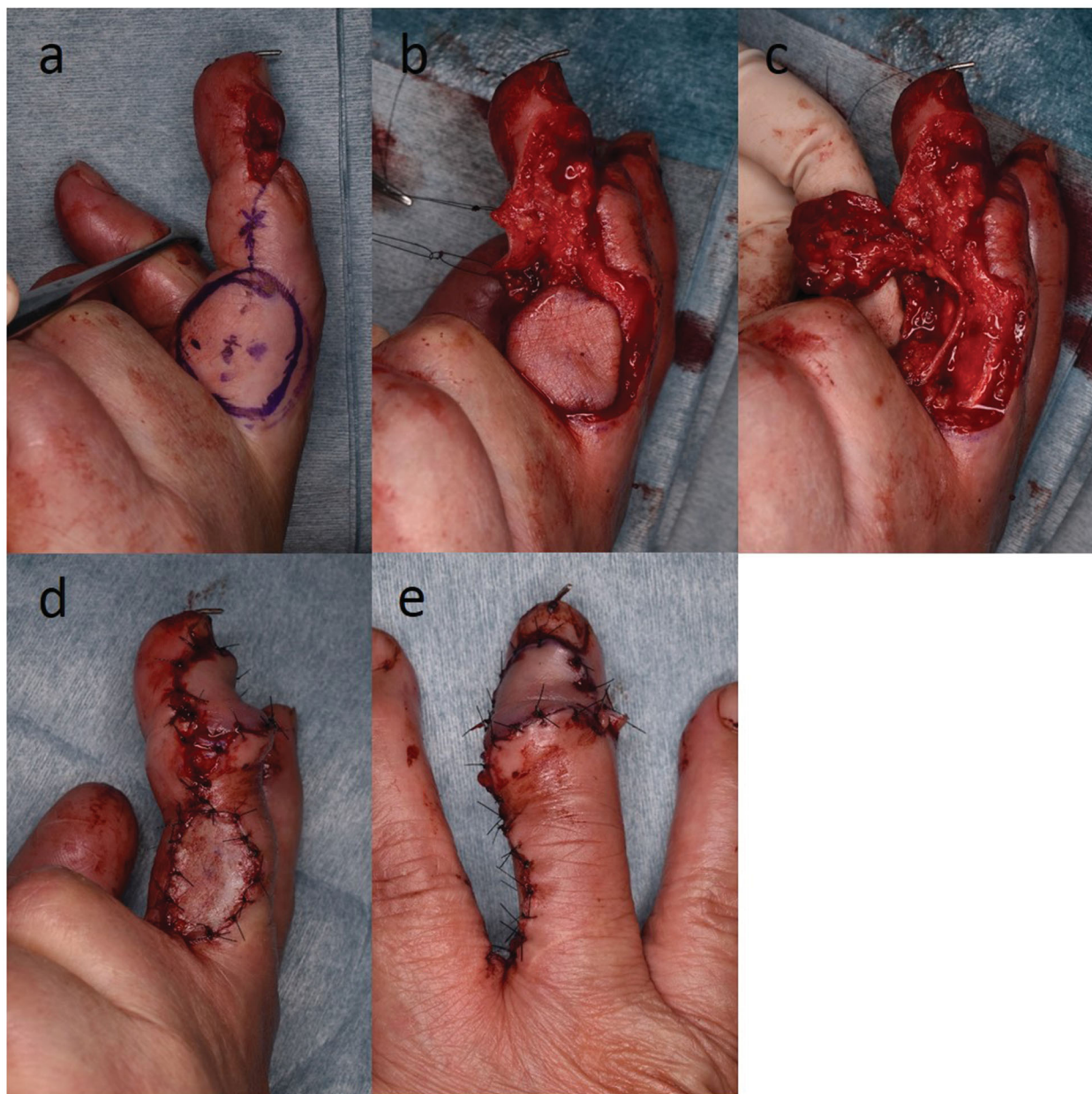


Figure 2. (a–e) Reversed digital artery flap reconstruction was performed.

Surgical treatment for tophus has become unpopular. Surgical treatment of gout is an ancient remedy; before the emergence of effective medical treatment, surgery was frequently performed. It was most commonly recommended for cosmetic reasons or for the removal of large deposits of sodium urate. Tophaceous gout results from prolonged hyperuricemia, and medications for lowering uric acid levels are usually effective. Therefore, gouty tophus is usually treated conservatively with drugs. There is a possibility of its disappearance, specifically the reduction of the tophus, by maintaining the serum uric acid level at <6.0 mg/dL, which is considered to also prevent recurrence. The indications for surgical interventions are

impairment of the function of tendons and joints, skin ulceration or necrosis over the tophi, local infections or septicaemia caused by tophi, nerve compression, presence or absence of a diagnosis of malignancy, and cosmetic reasons. Although controlled trials comparing medical and surgical therapies are lacking, surgery can potentially restore function faster than medical therapy and prevent complications in some individuals with persistent tophi. The treatment preference should be based on the patient's condition [6].

In our case, it was difficult to diagnose gouty tophus before surgical resection, and we had to exclude malignant diseases. We performed biopsy and subsequently covered the skin defect using a digital

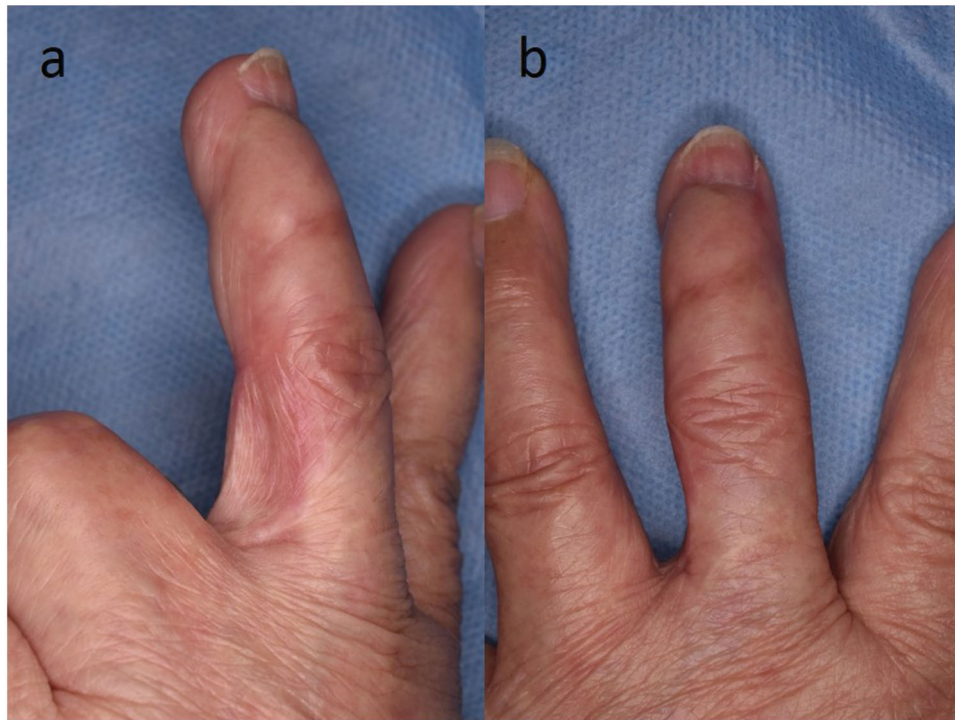


Figure 3. (a–b) Six months after the operation.

artery flap. The postoperative outcome was uneventful, and the patient's ability to perform activities of daily living was similar to that preoperatively. A few articles have reported surgical operation of a gouty tophus, and the present case can be used for future reference.

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Disclosure statement

The authors report no conflict of interest.

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